In the same manner it will be found that

p«=pi-A.,(H-/i),.....(c)

pi^pt-^H-fy-AnJi,.....(d)

A_t being the specific weight of the gas which is at rest and *h* being the thickness of the layer of gas flowing through the section *cd.*

The difference in head or pressure which acts to cause the flow of the gaseous vein *Id* is

s

The difference in pressure or head for the vein *ac* which rises, as it flows *a* to c, the distance cci=//— A, will be

This difference in pressure or head being the same for the two extreme veins or flow lines *bd* and *cd,* it is not difficult to see that it will be the same for all of the intermediate veins or lines of flow.

Therefore, the velocity of all of the elementary veins or flow lines may be determined, as they are based upon the difference in level and they will be the same; that is, the velocities of all the particles flowing through the section *cd* are equal.

It is possible to determine the theoretical velocity of the gas in motion by the equation

from which

A) = ... (1)

The theoretical volume of gas Q_t which will flow under the sill or weir in a layer whose thickness is *h* and whose width is *B* will be equal to

h)^{A}-^ . . . . (2)

If it is possible, in the case of flowing gases which is being analyzed, to adopt the hypothesis assumed by Boussinesq, for the flow of water over a weir, the head at the crest *h* is established

in such a fashion that q_t attains its maximum value for any given